

**What is claimed is:**

1           1.       An apparatus for providing signaling for switching and control of  
 2       transmissions in an integrated optical network, said apparatus comprising:  
 3           a plurality of electrical signaling interfaces for receiving requests from external  
 4       signaling networks;  
 5           a processing module for processing said requests from said external signaling  
 6       networks; and  
 7           at least one optical signaling interface for coupling to optical components in said  
 8       integrated optical network, said optical signaling interface being operable to transmit  
 9       processed requests from said processing module for assignment of optical channels for  
 10      said optical components.

1           2.       The apparatus of Claim 1, wherein said external signaling networks are  
 2       selected from the group consisting of circuit switched signaling networks, packet switched  
 3       signaling networks, SS7, H323, SIP and other enhanced signaling system (ESS)  
 4       apparatus.

1           3.       The apparatus of Claim 1, wherein said optical components are selected  
 2       from the group consisting of optical cross connects, optical add/drop multiplexers and  
 3       optical service nodes including at least one optical cross connect and optical add/drop  
 4       multiplexer.

1           4.       The apparatus of Claim 1, wherein said processing module is a signaling  
 2       and call control processor.

1           5.       The apparatus of Claim 4, further including a signaling and endpoint  
 2       applications module coupled to said processor module for providing electronic and optical  
 3       routing decisions.

1           6.       The apparatus of Claim 5, further including a network management and  
 2       provisioning module for providing network management interaction for reporting of  
 3       alarms and receiving commands for provisioning and reconfiguration of said apparatus.

1           7.       The apparatus of Claim 6, further including a system administration module  
2       for providing an operator interface for administration and maintenance of said system.

1           8.       The apparatus of Claim 1, wherein said optical signaling interface couples  
2       to said optical components through an optical user network interface.

1           9.       The apparatus of Claim 8, wherein said apparatus is further operable to  
2       control signaling of electrical switching devices that couple to said apparatus through an  
3       optical service node.

1           10.      The apparatus of Claim 1, wherein said apparatus is operable to assign  
2       individual wavelengths in said optical components in accordance with requests from said  
3       external signaling networks and allocate calls to existing wavelengths.

1           11.      An apparatus for providing switching fabric independent allocation of  
2       transport resources in an integrated optical network, said apparatus comprising:

3           a plurality of electrical signaling interfaces for receiving requests from external  
4       signaling networks;

5           a signaling and call control module for processing said requests from said external  
6       signaling networks;

7           a signaling and endpoint applications module coupled to said signaling and call  
8       control module for providing electronic and optical routing decisions

9           a network management and provisioning module for providing network  
10      management interaction for reporting of alarms and receiving commands for provisioning  
11      and reconfiguration of said apparatus; and

12          at least one optical signaling network interface for coupling to optical components  
13      in said integrated optical network, said optical signaling interface being operable to  
14      transmit processed requests from said signaling and control module for assignment of  
15      optical channels for said optical components.

1           12.     The apparatus of Claim 11, wherein said apparatus is further operable to  
2 control signaling of electrical switching devices that couple to said apparatus through an  
3 optical service node.

1           13.     The apparatus of Claim 11, wherein said apparatus is operable to assign  
2 individual wavelengths in said optical components in accordance with requests from said  
3 external signaling networks and allocate calls to existing wavelengths.

1           14.     The apparatus of Claim 11, wherein said external signaling networks are  
2 selected from the group consisting of circuit switched signaling networks, packet switched  
3 signaling networks, SS7, H323, SIP and other enhanced signaling system (ESS)  
4 apparatus.

1           15.     The apparatus of Claim 11, wherein said optical components are selected  
2 from the group consisting of optical cross connects, optical add/drop multiplexers and  
3 optical service nodes including at least one optical cross connect and optical add/drop  
4 multiplexer.

1           16.     A method for providing signaling for switching and control of  
2 transmissions in an integrated optical network, said method comprising:

3           receiving requests from external signaling networks at an electrical signaling  
4 interface;

5           processing said requests from said external signaling networks; and

6           transmitting processed requests from said processing module via an optical  
7 signaling interface that couples to optical components in said integrated optical network  
8 for assignment of optical channels for said optical components.

1           17.     The method of Claim 16, wherein said external signaling networks are  
2 selected from the group consisting of circuit switched signaling networks, packet switched  
3 signaling networks, SS7, H323, SIP and other enhanced signaling system (ESS)  
4 apparatus.

1           18.     The method of Claim 16, wherein said optical components are selected  
2     from the group consisting of optical cross connects, optical add/drop multiplexers and  
3     optical service nodes including at least one optical cross connect and optical add/drop  
4     multiplexer.

          19.     A system for providing signaling for switching and control of transmissions  
in an integrated optical network, said system comprising:

          a signaling apparatus including,

                  a plurality of electrical signaling interfaces for receiving requests from  
external signaling networks;

                  a processing module for processing said requests from said external  
signaling networks; and

                  at least one optical signaling interface for coupling to optical components  
in said integrated optical network, said optical signaling interface being operable to  
transmit processed requests from said processing module for assignment of optical  
channels for said optical components; and

          an optical service node including,

                  at least one optical cross connect (OXC); and

                  at least one optical add/drop multiplexer (OADM), said OADM including  
electrical interfaces to circuit switched and packet switched fabrics, said OXC and  
OADM each including at least one interface to an optical network or other optical  
components,

          said optical service node coupling to said signaling apparatus through an optical  
user interface, wherein assignment of optical and electrical transmission channels may  
accomplished utilizing said system.